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EXAMINER

VO. T

ART UNIT

PAPER NUMBER

2821

2

DATE MAILED: 09/30/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
09/339,616

Applicant(s)

MARK ALLEN

Examiner

Tuyet Vo

Group Art Unit

2821



☒ Responsive to communication(s) filed on 24 Jun 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-28 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-28 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

## **DETAILED ACTION**

### ***OATH/DECLARATION***

The declaration filed 24 June 1999 is acceptable.

### ***INFORMATION DISCLOSURE STATEMENT***

The references cited on PTOL 1449 have been considered.

### ***DRAWINGS***

The drawings filed 24 June 1999 are rejected by Notice of Draftperson's Patent Drawing Review.

### ***SPECIFICATION***

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***CLAIM REJECTIONS***

#### ***Claim Objections***

1. Claim 28 is objected to because of the following informalities:  
Line 3, "adaptably" should be changed to --adaptively-- because there is no adaptably

word defined in a dictionary.

*Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12, 14-18 and 21-25 are rejected under 35 USC 103 (a) as being unpatentable over the prior art described in Reymond's reference (US Pat. 5,936,599) in view of Tong (US Pat. 4,223,248).

Regarding claims 1- 4, 6, 21, 23 and 25, Reymond's reference shown the prior art in Fig. 3 which comprises:

- a plurality of light emitting diodes "LEDs" (24, 26) electrically coupled in series to form at least one series block, each series block (24) being electrically coupled in parallel between each of a pair of wires having a source end (Fig. 3);

- a first connector (not shown) electrically connected at the source end (AC power source) (Fig. 3),

- AC power source having an alternating current voltage of at least about 110 volts (col. 5, lines 58-60).

The prior art in Reymond's reference does not disclose each series block being electrically coupled in parallel between each of a pair of wires having intermediate the source end and the terminal end (Fig. 3);

Tong discloses in Fig. 2B a light string set in serial block having intermediate a source and a terminal end (28, 29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the prior art described in Raymond's reference into the terminal receptacle assembly taught by Tong for permitting parallel connection between light string sets, increasing the arrangement in lighting fashion. The value of power supply must correspond to the number of LEDs within the operating range of current allowing through each LED. Therefore, the circuit being supplied by AC power of 110 Volts or 220 volts merely involves a routine to one having skill in the art.

Regarding claim 5, the prior art of Raymond's reference in view of Tong teaches substantially the claimed invention as noted above and further discloses:

- each LED has a p-n junction defining a break down voltage above which voltage applied in reverse bias said p-n junction breaks down, and in which light string the alternating current voltage is less than the break down voltage (col. 5, lines 1- 13). The series diode strings 24 and 26 connected in parallel with opposite polarities (not end to end) alternatively turn during each half cycle of the AC voltage source applied, e.g., the diode string 24 turns on while the diode string 26 is off due to its reverse bias (or break down ) voltage greater than AC supply voltage through it. The diode ratings are different depending on type of diode which may arrange from 50V up to 1000V. Therefore, it is obvious to choose any type of diode which has its ratings specified by manufacturer for particular application involve only routine skill in the art.

Regarding claims 7-12, 22 and 24, the prior art in Raymond's reference in view of Tong remains silent as followings:

- the human eyes perceive as continuous light emitted from LED with operating frequency about 60 Hz,
- coupling of multiple light strings in an end-to-end arrangement,
- the number of LEDs of each series block is at most a maximum number determined by the electrical power supply.
- LEDs in each series block are either of the same colors or of different colors in random or non random order,

The above claimed inventions are obvious to one ordinary skill in the art because as

following:

- the human eyes perceive lighting as continuous for a light that emits at frequency above 4Hz, therefore, lighting emitted from LEDs which operate with a frequency about 60Hz definitely not being noticed by human eye as discontinuous lighting.

- coupling of multiple light strings in an end-to-end arrangement or opposite polarity provide the same perceive of light in human eyes, since each LEDs' string operates only in either positive half cycle or negative half cycle AC power supply but not both.

- the level of current flowing via the LEDs string must be acceptable by LEDs' manufacture rating for efficiency, therefore, obtaining an appropriate current, the total supply voltage and total number of LEDs have to be determined for maximum benefit. The maximum number of LEDs in each string can be determined by ratio of the power supply V and a minimum current I of an operating range flowing in each LEDs' string ( maximum LEDs in each string =  $V/I$ ).

- colorful LEDs arranged in an above manner are obvious to one having ordinary skill in the art, since it involved only routine skill in the art.

Regarding claims 14-18, the prior art taught in Reymond's reference in view of Tong remains silence since those claimed inventions are likewise the previous claims which are obvious to one having ordinary skill in the art knowing how to implement or rearrange the light string for optimum operation, safety such as arranging uniformly spaced apart between LEDs string which involves only routine skill in the art.

4. Claims 19, 20, 26 and 27 are rejected under 35 USC 103 (a) as being unpatentable over the prior art taught in Reymond's reference further in view of Tong and Chang (US Pat. 5,887,967).

The prior art in Reymond's reference in view of Tong discloses substantially the claimed invention as noted above. However, Raymond's prior art and Tong remain silent about a polarized socket which holds LED.

Chang discloses in Fig. 2 a socket which holds LED wherein marks 31, 41 and 21

inherently indicate the polarity of the LED.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a socket taught by Chang into the lighting system of Tong and the prior mentioned in Reymond's reference for improving structure of decorating light strings and reducing the manufacturing cost due to fewer components fabricating in a LED lighting circuitry.

5. Claims 13 and 28 are rejected under 35 USC 103 (a) as being unpatentable over Reymond in view of Tong and Yam (US Pat. 5,762,419).

The prior art in Reymond's reference in view of Tong teaches substantially the claimed invention as noted above. However, none of them teaches about LED comprises a lossy fiber-optic rod having a diameter equal to a diameter of a corresponding LED lens and a fiber housing, wherein the fiber housing adaptively receives the rod and LED lens into opposing.

Yam discloses in Fig. 18 a LED (115) having housing and a fiber optic guide (256), wherein the LED and the fiber optic guide are an equal diameter and in an opposite end of the housing (Fig. 18).

Yam discloses the fiber optic guide which can have shape, size or material depending on where its use.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the method using fiber optic guide as taught by Yam into the Tong's light circuit implemented by the prior described in Raymond's reference for transmitting the LEDs lights through fiber optic guide which can be obtained in any size or material through electronic manufacturers for particular application.

*Citation of pertinent prior art*

6. The prior art made of record and not relied upon is considered pertinent to applicants'

disclosure.

Crucefix (US Pat. 4,870,547) discloses a Christmas tree lights assembly in parallel and series connection.

Wang et al. (US Pat. 5,828,183) disclose a flashing control circuit for decorating light tring.

Hochstein (US Pat. 5,661,645) discloses a power supply for light emitting diode array.

Deese (US Pat. 5,806,965) discloses a LED beacon light having plurality of LEDs provided a substantially omnidirectional pattern of light.

Katoh (US Pat. 5,187,377) discloses a LED array for emitting llight of multiple wavelengths.

Chen et al. (US Pat. 5,094,632) disclose a connector for Christmas light strings and fasteners.

### ***CONCLUSION***

Any inquiry concerning this Office Action from the examiner should be directed to Examiner Tuyet Vo whose telephone number is (703) 306-5497.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Papers related to Group Art Unit 2821 applications only may be submitted to Group Art Unit 2821 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT."

The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2810 Fax Center number is (703) 308-7722.



Application Serial Number: 09/339616  
Office Action: 1

Art Unit: 2821  
File Paper Number: 2

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*Tuyet Vo*

*Examiner*

*Art Unit 2821*

September 26, 1999



Don Wong  
Supervisory Patent Examiner  
Technology Center 2800